

Amendments to the Claims:

This listing of the claims will replace all prior versions and listings of the claims in this application:

1. (Cancelled)

2. (Currently Amended) A method of disposing waste, said method comprising [the steps of]:

forming [a] at least one primary waste pond at least partially constructed from earthwork and positioned within an outer pond that overlays said primary waste pond and surrounds at least an upper lateral portion of said primary waste pond; and

establishing a stable microbiological methane fermentation zone within each of said primary waste [pond] ponds;

wherein [said forming step includes the step of forming several primary waste ponds within said outer pond] at least one of said primary waste ponds has a bottom that is at least 6 meters below a surface of said outer pond and is at least partially separated from said outer pond by a wall.

3-14. (Cancelled)

15. (Currently Amended) A method of disposing waste, said method comprising [the steps of]:

forming a primary waste pond within an outer pond wherein said primary waste pond is at least partially constructed of earthwork and has a bottom that is at least 6 meters below a surface of said outer pond; [and]

establishing a stable microbiological methane fermentation zone within said primary waste pond;

collecting a gas emitted from said stable microbiological methane fermentation zone in a submerged gas collector;

[transporting said gas by way of a central mast pipe;] and
collecting said gas in a gas cap.

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16. (Original) The method of claim 15, wherein said method further comprises: using said gas for power generation.

17-24. (Cancelled)

25. (Currently Amended) A method of disposing waste, said method comprising: forming one or more inner ponds within an outer pond wherein at least one of said inner ponds has a bottom that is at least 6 meters below a surface of said outer pond;

establishing one or more stable microbiological methane fermentation zones within said one or more inner ponds;

wherein [said establishing step includes creating a] each of said stable microbiological methane fermentation [zone comprising] zones comprises facultative heterotrophic bacteria and methane bacteria[, creating a stable microbiological methane fermentation zone comprising facultative heterotrophic bacteria and methane bacteria,]; and

causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

26. (Currently Amended) A method of disposing waste, said method comprising: forming one or more inner ponds within an outer pond wherein at least one of said inner ponds is at least partially constructed of earthwork and has a bottom that is at least 6 meters below a surface of said outer pond;

establishing one or more stable microbiological methane fermentation zones within said one or more inner ponds

collecting a gas emitted from at least one of said methane fermentation [zone] zones in a submerged gas collector;

[transporting said gas by way of a central mast pipe;] and
collecting said transported gas in a gas cap.

27. (Previously Added) The method of claim 26, further comprising using said gas for power generation.

28-33. (Cancelled)

34. (Currently Amended) A method for treating wastewater, comprising:
establishing a methane fermentation zone within a pond having a [substantially open] surface exposed to sunlight, wherein said methane fermentation zone is disposed below said open surface, is at least partially laterally surrounded by said pond, and has a bottom that is at least 6 meters below a top surface of said pond and is at least partially separated from said outer pond by a wall; and
feeding wastewater into said methane fermentation zone.

35. (Previously Added) The method of claim 34, wherein said establishing comprises establishment of a second methane fermentation zone within said pond.

36. (Currently Amended) The method of claim 34, wherein said establishing comprises establishment of a methane fermentation zone within a pond comprising aerobic wastewater near the surface.

37. (Previously Added) The method of claim 34, further comprising generating free molecular oxygen in said pond from growth of microalgae.

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38. (Previously Added) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone comprising semi solid material in a highly reduced state to facilitate conversion to methane.

39. (Previously Added) The method of claim 34, further comprising deflecting oxygen from said methane fermentation zone.

40. (Previously Added) The method of claim 39, wherein said deflecting comprises deflecting oxygen to reduce intrusion of dissolved oxygen from said pond into said methane fermentation zone.

41. (Previously Added) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone comprising settleable solids, facultative heterotrophic bacteria and methane bacteria.

42. (Previously Added) The method of claim 41, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission.

43. (Currently Amended) The method of claim 41, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

44. (Previously Added) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone having a top surface area no greater than approximately 0.09 hectare.

45. (Previously Added) The method of claim 44, wherein said establishing comprises establishment of a methane fermentation zone having a depth of approximately 6 to 8 meters.

46. (Cancelled)

47. (Previously Added) The method of claim 34, wherein said methane fermentation zone comprises a bottom that is lower than a bottom of said pond.

48. (Currently Amended) The method of claim 34, further comprising oxidizing gaseous hydrogen sulfide emissions from said methane fermentation zone using aerobic wastewater in said pond to form sulfates, thereby reducing noxious odors.

49. (Currently Amended) The method of claim 34, wherein said wastewater flows out of said methane fermentation zone in an upward direction at a rate of less than 1.8 meters per day.

50. (Currently Amended) A method of treating wastewater, comprising:

establishing methane fermentation within a fermentation pit that is covered by at least partially photosynthetically oxygenated wastewater of a pond and having a bottom that is at least 6 meters from a top surface of said pond; and feeding wastewater into said fermentation pit.

51. (Previously Added) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within said fermentation pit within said pond.

52. (Previously Added) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within said fermentation pit that comprises semi solid material in a highly reduced state to facilitate conversion to methane.

53. (Currently Amended) The method of claim 50, further comprising deflecting dissolved oxygen from said fermentation pit.

54. (Currently Amended) The method of claim 53, wherein said deflecting comprises deflecting oxygen to reduce intrusion of dissolved oxygen from said pond into said fermentation pit.

55. (Previously Added) The method of claim 50, wherein said establishing comprises establishment of said methane fermentation zone comprising settleable solids, facultative heterotrophic bacteria and methane bacteria.

56. (Previously Added) The method of claim 55, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission.

57. (Currently Amended) The method of claim 55, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

58. (Previously Added) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within an open pit that has a top surface area no greater than approximately 0.09 hectare.

59. (Previously Added) The method of claim 58, wherein said establishing comprises establishment of a fermentation zone having a depth of approximately 6 to 8 meters.

60. (Cancelled)

61. (Currently Amended) The method of claim 50, further comprising oxidizing gaseous hydrogen sulfide emissions from said methane fermentation zone to form sulfates by means of aerobic wastewater of said outer pond, thereby reducing noxious odors.

62. (Previously Added) The method of claim 50, wherein said methane fermentation zone comprises a bottom that is lower than a bottom of said pond.

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63. (Currently Amended) The method of claim 50, further comprising oxidizing gaseous hydrogen sulfide emissions from said methane fermentation zone using aerobic wastewater in said pond to form sulfates, thereby reducing noxious odors.

64. (Currently Amended) The method of claim 50, wherein said wastewater flows out of said methane fermentation zone in an upward direction at a rate of less than 1.8 meters per day.

65. (Currently Amended) A method of treating wastewater, comprising:
forming one or more inner ponds within an outer pond, said outer pond having a [substantially open] surface exposed to sunlight;

establishing [one or more] a separate methane fermentation zone[s] within each of said one or more inner ponds, wherein said one or more [methane fermentation zones] inner ponds are disposed below said [open] surface of said outer pond and have a bottom that is at least 6 meters below said surface of said outer pond; and

feeding wastewater into said one or more methane fermentation zones.

66. (Previously Added) The method of claim 65, wherein said forming comprises forming an outer pond comprising at least partially photosynthetically oxygenated wastewater.

67. (Previously Added) The method of claim 65, further comprising generating free molecular oxygen in said outer pond from growth of microalgae.

68. (Previously Added) The method of claim 65, wherein establishing comprises establishment of said one or more methane fermentation zones comprising semi solid material in a highly reduced state to facilitate conversion to methane.

69. (Previously Added) The method of claim 65, further comprising deflecting oxygen from said one or more methane fermentation zones.

70. (Previously Added) The method of claim 65, further comprising deflecting oxygen to reduce intrusion of dissolved oxygen from said outer pond into said one or more methane fermentation zones.

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71. (Previously Added) The method of claim 65, wherein said establishing comprises establishment of said one or more methane fermentation zones comprising facultative heterotrophic bacteria and methane bacteria.

72. (Previously Added) The method of claim 71, wherein said establishing comprises causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission.

73. (Currently Amended) The method of claim 71, wherein said establishing comprises causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

74. (Cancelled)

75. (Previously Added) The method of claim 74, wherein said forming comprises forming an inner pond that is about 6 to 8 meters deep.

76. (Previously Added) The method of claim 75, wherein said forming comprises forming an inner pond that has a top surface area no greater than approximately 0.09 hectare.

77. (New) A method of treating wastewater, comprising:
establishing methane fermentation within a fermentation pit that is within an outer pond, wherein said fermentation pit has a bottom that is at least 6 meters from a top surface of said outer pond;

deflecting dissolved oxygen in said outer pond from said fermentation pit with a wall vertically surrounding said fermentation pit, wherein a top of said wall is at least 1.5-2.5 meters below said top surface of said outer pond; and

feeding wastewater into said fermentation pit.

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78. (New) A method of treating wastewater, comprising:
establishing methane fermentation within a fermentation pit that is within an outer pond;

deflecting dissolved oxygen in said outer pond from said fermentation pit with a wall vertically surrounding said fermentation pit, wherein said wall has a height of approximately 2.5 meters from the bottom surface of said outer pond adjacent to said fermentation pit; and

feeding wastewater into said fermentation pit.